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PERSPECTIVE

Introduction to the special collection on biomedical education

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Education is what survives

"when what has been learned

has been forgotten".

B. F. Skinner (1904-1990), American psychologist, behaviorist and social philosopher. "New Methods and New Aims in Teaching" in New Scientist, May 21, 1964.

The recent COVID-19 crisis has posed a severe challenge to the educational system worldwide. Hearing from many of our colleagues, how they together with their students approached and overcame these hurdles, is inspiring. Educators in many biomedical fields, who thought that they require in-person teacher-to-learner contacts to carry out their teaching missions, found ways to continue. That is not to say that these new, mainly remote ways of teaching are always better or equivalent to traditional approaches, but they are providing an alternative that gets the job done. Most importantly, novel avenues of teaching are being found and the educational process continues. To quote a statement that is often falsely attributed to Charles Darwin, "It is not the most intellectual of species that survives; it is not the strongest that survives; but the species that survives is the one **that is able best to adapt and adjust to the changing environment** in which it finds itself."[1]

The education of new generations of scientists, physicians and academic leaders has been in a state of change for a long time, well before the outbreak of the COVID-19 pandemic. Many past and current advances in biomedical education are driven by technology. Starting from pre-kindergarten up to professional and graduate schools, e-learning is now a standard component of didactic instruction. With the recent forced switch from classroom to social distance learning, this shift has been significantly accelerated. The growing importance of technology in the educational sector might project a more "mechanistic form" of learning, as Skinner prophetically predicted and warned against in his 1964 piece in the New Scientist.[2] However, while cognizant of the concerns of faculty, the e-learning movement is promising and in many instances is already delivering meaningful scholastic advances.

An increasing dependency on advanced technology has also changed the professional environment for which we prepare our students and into which they will enter upon graduation. This new reality not only applies to the various fields of basic research, but also to the clinical realm where new technology-based diagnostic and therapeutic strategies play an ever increasing role in the diagnosis and treatment of disease. It is our responsibility as educators to equip our students with the new knowledge and skills, which they will require in this ever changing working environment. Today, we may not know or even anticipate the exact nature of the upcoming challenges that our current students will encounter during the course of their professional careers. Nevertheless, we are charged to prepare them for this uncertain future.

Although the pandemic has focused many educators' attention on the need to rapidly switch to virtual learning, we would be remiss if we did not consider the broad spectrum of trends in education. To name but a few, we must always consider the human side of teaching and learning and acknowledge the importance of student-to-student and student-to-teacher interactions and communications in the education process. The evolving movement to competency-based, time-independent learning necessitates the development of new assessment tools and advancement standards. And the growing preponderance of team-based science and clinical work requires the development of new educational models.

Educators worldwide have realized that the traditional ways of biomedical education, despite their time-proven values, will not suffice to prepare new generations of students for these upcoming challenges. They are devising a kaleidoscope of old and new strategies and resources, many technology-based, to answer this call for action. However, critical analysis and rigorous testing is needed as they are introduced into the existing educational systems. In addition, what works for one area or level of education, may not be equally beneficial for others. Differences in geographical, social and cultural traditions likely will require diverse approaches and a range of individualized solutions. Confirming Skinner's conclusions, we need a new and always adapting type of teacher, one who will effectively use modern technology and novel didactic strategies for the benefit of each individual student while preserving the foundational components of learning.

This special collection on Biomedical Education will showcase some central aspects and paradigm-shifting developments of this quickly evolving field. However, like with most fast-moving targets, it is impossible to comprehensively cover every facet. Despite our efforts to address as many important topics as possible, it will remain incomplete and will continue to be a work in progress, much like our brave new world of education.

CONFLICT OF INTEREST

None.

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